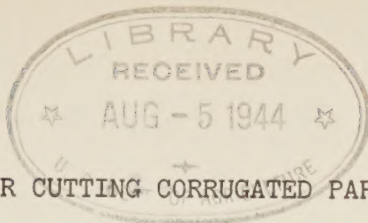


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December 1934

# AN APPARATUS FOR CUTTING CORRUGATED PAPER STRIPS

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## Purpose

Strips of corrugated paper are frequently used as a medium for cocoons in the laboratory manipulation of many lepidopterous insects. In rearing the oriental fruit moth for parasites, several thousand feet of such strips are used each season. The strips should be uniformly  $\frac{3}{8}$  inch wide, to allow the formation of one cocoon only in each corrugation. The strips are cut in lengths suited to the container being used. Such strips can be cut on a board with a sharp knife, but they are not of uniform width and the operation is slow and laborious. They may also be cut on a paper trimming board, but in most instances the required lengths would necessitate a very large board; also the corrugations are flattened at the ends by the pressure of the cutting blade.

## Description of Apparatus

A satisfactory apparatus has been assembled at the Moorestown, N. J., laboratory for cutting strips and has been in use throughout the past season. It is composed of a 2-inch circular blade mounted on the shaft of an electric motor, and a feed or guide platform. The cutting blade is obtained from a paper hanger's trimming knife. The motor is  $\frac{1}{2}$  h.p., universal, 110 volts. The brushes of the motor are set to rotate the armature counter-clockwise. The shaft was drilled and tapped for a machine screw, by which the blade is attached. The guide platform was made of angle iron ( $\frac{1}{8}$  by  $1\frac{1}{2}$  by  $1\frac{1}{2}$  inches) mounted on a wooden block. The angle iron has a slot in one end to receive the cutting blade. This slot should be as narrow as the end play of the motor will permit. 1/ The best operation was obtained when the center of the motor shaft was  $\frac{1}{2}$  inch above the platform and  $3/16$  inch from the end; this was with a 2-inch blade. For different sized blades the same relative position should be found. To permit safe operation, a guard of 18-gage galvanized iron metal was attached as shown in the figures. Additional equipment includes a carborundum stone for sharpening, toggle switch, and extension cord with plug.

1/ The design of the guide platform was improved and simplified by Frank Irons, Bureau of Agricultural Engineering, U. S. Department of Agriculture.



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The following is the approximate cost of materials used:

	<u>Approximate cost</u>
Motor, 1/3 h.p., 110 v.	\$10.00
Circular blade	.50
Angle iron	.15
Lumber	.15
Electrical accessories	.50
Miscellaneous hardware	.15
Total	<u>\$11.45</u>

## Performance

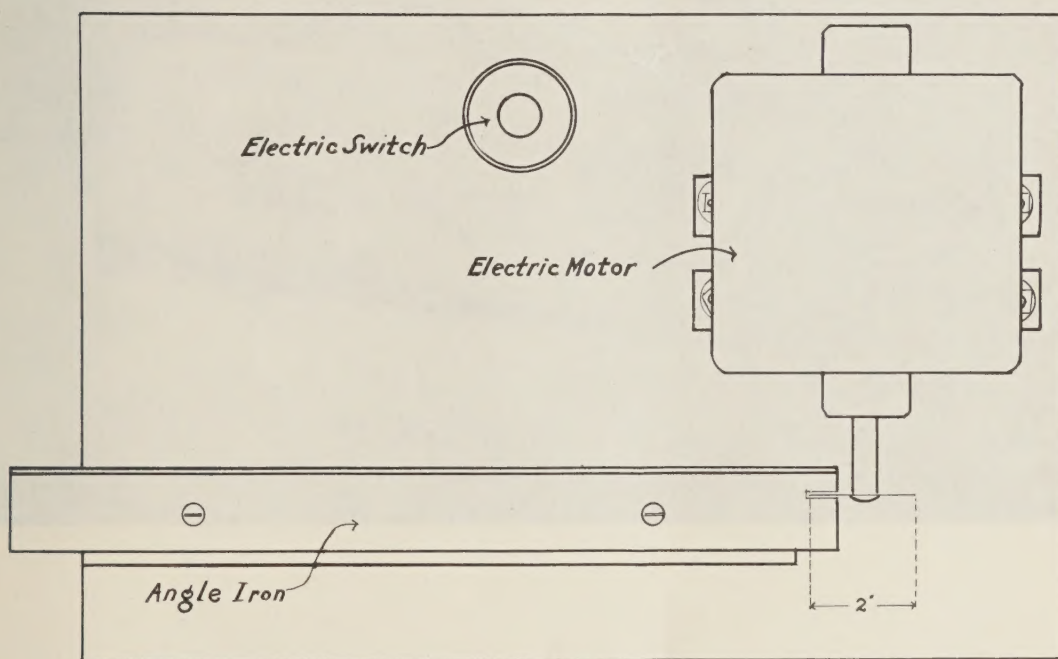
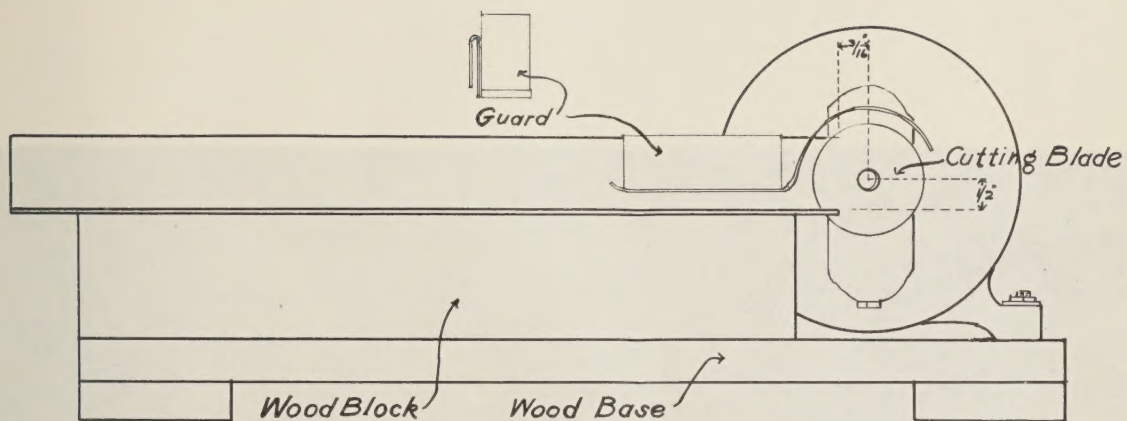
With this apparatus it is possible to cut 40 linear feet of corrugated paper strips per minute, as compared to 16 feet per minute when using a board and knife. Also the strips are uniform in width and the ends are cleanly open and readily accessible to entering larvae. It is obvious that this is a relatively inexpensive labor-saving device, when large quantities of corrugated paper strips are being used.

Figure 1.--Drawings of front and top views.

Figure 2.--Photograph of apparatus.

The apparatus consists of a motor, a circular blade, an angle iron, a wooden block, and a guide plate. The motor is a 1/3 h.p., 110 v. universal motor. The shaft of the motor is connected to a machine screw by which the blade is rotated. The blade is a circular blade made of angle iron (1/2 by 1/2 by 1/4 inches) mounted on a wooden block. The angle iron has a slot in one end to receive the cutting blade. The slot should be as narrow as the end of the motor shaft will permit. The best operation was obtained when the center of the motor shaft was 1/2 inch above the platform and 3/16 inch from the end. This was with a 3-inch blade. For different sized blades the same relative position should be found. To permit safe operation a guard at its own position should be attached as shown in the figures. Additional equipment includes a carbonous stone for sharpening, toggle switch, and extension cord with plug.

The design of the guide platform was improved and simplified by Frank Brown, Bureau of Agricultural Engineering, U. S. Department of Agriculture.



*Fig. 1*





